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10052225 ZA

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The
United
States
of
America



The Commissioner of
Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bruce Lehman
Commissioner of Patents and Trademarks

Andrea J. Morton
Attest

NOTICE

If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.



US00567931A

United States Patent [19]

Nojima et al.

[11] Patent Number: **5,679,313**[45] Date of Patent: **Oct. 21, 1997**

[54] AMMONIA DECOMPOSITION CATALYSTS

[75] Inventors: Shigeru Nojima; Rie Tokuyama;
Kouzo Iida, all of Hiroshima, Japan[73] Assignee: Mitsubishi Jukogyo Kabushiki
Kaisha, Tokyo, Japan

[21] Appl. No.: 472,057

[22] Filed: Jun. 6, 1995

[51] Int. Cl.⁶ C01B 3/04

[52] U.S. Cl. 423/237; 423/351; 423/658.2

[58] Field of Search 423/328.2, 237,
423/351, 658.2; 502/64, 66

[56] References Cited

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Primary Examiner—Wayne Langel
Attorney, Agent, or Firm—Michael N. Meller

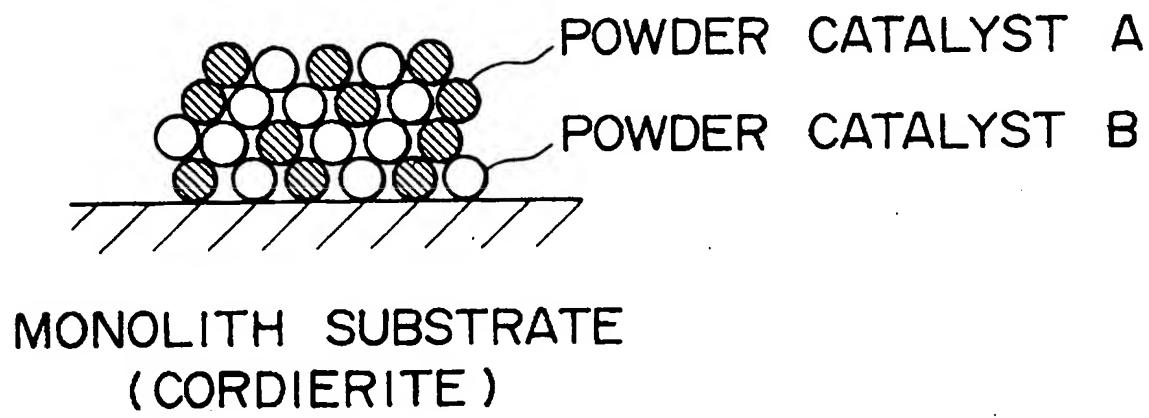
[57] ABSTRACT

An ammonia decomposition catalyst wherein a first catalyst having a crystalline silicate which is represented by the formula in terms of molar ratio of oxides as dehydrated:

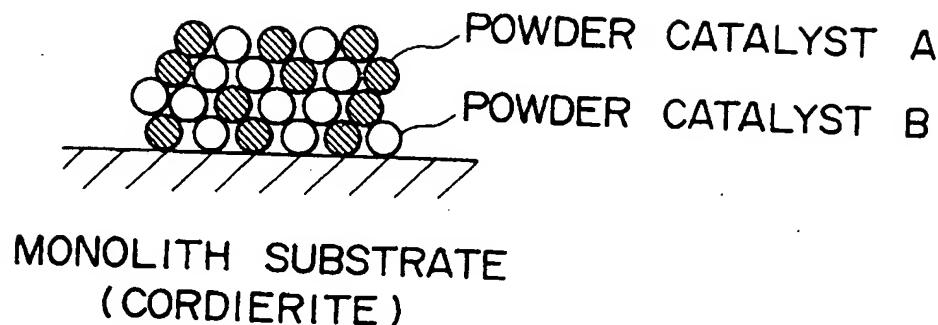


wherein R denotes an alkaline metal ion and/or hydrogen ion, M denotes a VIII Group element, rare earth element, titanium, vanadium, chromium, niobium, antimony or gallium, M' denotes magnesium, calcium, strontium or barium, $a \geq 0$, $20 > b \geq 0$, $a+c=1$, $3000 > y > 11$ or a specific porous material as a carrier and iridium or a noble metal as an active metal is present together with or covered with a second catalyst having at least one element selected from the group consisting of titanium, vanadium, tungsten and molybdenum, if necessary, as well as a method of using the same.

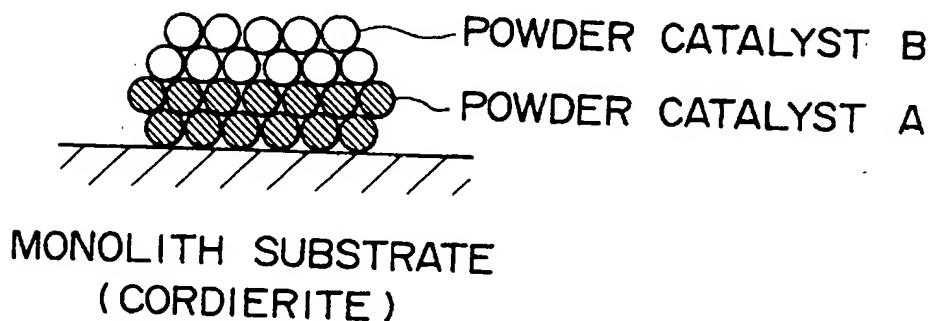
7 Claims, 1 Drawing Sheet



F I G. 1



F I G. 2



F I G. 3

